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SENSORY INNERVATION OF LYMPH FOLLICLES IN THE CONJUNCTIVA OF CYNOMOLGUS MONKEYS

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Purpose
To describe access to and distribution of nerve fibres within follicles and to identify those of ophthalmic nerve origin.

Methods
Ten animals were fixed by cardiac perfusion, the palpebral conjunctiva dissected and prepared for light and electron microscopy. The ophthalmic nerve was transected intracranially in three animals 4-8 days before perfusion.

Results
All follicles were innervated. Small nerves usually entered follicles at their base, often together with an arteriole. Terminals were found regularly in arteriole walls and sparsely in all areas of follicles. Most were located among reticular fibres but a few contacted lymphocytes. Small granular vesicles is some, especially vasculature terminals, revealed their sympathetic identity. Naked axons regularly entered the specialised epithelium of the M-cell zone; these were mostly disposed basally and were filled with mitochondria. Adjacent epithelium was not innervated. Following ophthalmic neurotomy a proportion of degenerated fibres were present in most of the nerves and terminals were no longer found in the epithelium.

Conclusion
Follicles have a sensory innervation with terminals located in the epithelium and in the parenchyme. The hitherto unknown M-cell innervation may respond antidromically to local irritation with release of substances modulating M-cell activity.

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TITLE : INVOLVMENT OF TARSAL ELASTIN IN EYELID HYPERLAXITY. CLINICAL AND HISTOLOGICAL STUDY.

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Purpose : The elasticity of the tarso-ligamentary band plays a role in various situations such as ectropion, entropion, ptosis, eyelid retraction, floppy eyelid syndrome. This study shows the aspects of tarsal elastin in various clinical situations.

Methods : In 100 patients, vertical laxity of both eyelids was measured and correlated to age, sex, weight, palpebral pathology, eyelid retraction, slit lamp examination and schirmer test.
Tarsal elastin has been histologically examinated in 10 patients, and in 12 fresh cadavers. Examination include orceine and Verhoeff's stains, and T.E.M.

Results : Elastin distribution within the tarsus is extremely variable. Meibomian glands are surrounded with regularly organized strong fibers. Elastin density diminishes with ageing. Technical difficulties for quantitative evaluation are discussed.

Conclusion : Elastin rarifaction may play a role in many eyelid disorders, but histological quantitative measurements are technically difficult. Periglandular organisation of fibers suggests a role in lacrimal secretion.

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FINE STRUCTURE AND NEUROPEPTIDES OF THE MEIBOMIAN GLAND

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Purpose To improve the knowledge on fine structure of the meibomian gland and to study its innervation using electron microscopical and immunohistochemical techniques.
Methods Meibomian glands from guinea pigs and humans were prepared and examined for the following parameters a) light and transmission electron microscopy (TEM) b) immunohistochemical (streptavidin biotin peroxidase complex / ABC) demonstration of protein gene product (PGP), calcitonin gene-related peptide (CGRP), neuropeptide Y (NPY), substance P (SP), and vasoactive intestinal polypeptide (VIP).
Results In both species the glands are composed of arrays of alveoli. The outer cells of the alveoli form a germinal layer. Toward the inside of the alveolus the cells become larger and are laden with secretory substance. The cells desintegrate as they approach the excretory duct. The stroma contains blood vessels and non-myelinated nerve fibers. The nerve fibers approach the basal alveolar cells and enter into the basal lamina of the capillaries. The distribution of nerves within the glands was revealed by PGP immunostaining. In the guinea pig many of the fibers were positive for NPY, SP and VIP, fewer for CGRP, while in the human only SP and CGRP could be demonstrated.
Conclusions Both the density of nerve fibers and the presence of series of neuropeptides suggest that the meibomian gland receives a moduladed stimulation.

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TITLE: EXPRESSION OF BETA INTEGRINS IN HUMAN PTERIGION.

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PURPOSE: the aim of this study was the identification of some alfa and beta subunits of integrins in the structure of pterigion. It is well known that integrins play a crucial role in manteining the normal tissue organization, and there are several pathology where the expression of integrins is altered. Recently, in psoriasis vulgaris the expression topography of integrins was found altered: for these reasons we evaluated the integrins in pterigion, a disease characterized by rearrangement of the extracellular matrix proteins and hyperproliferation of the epithelial cells, such us psoriasis.
METHODS: we studied beta1, alfa 2, alfa3, beta4, alfa6, av and alfa5 integrins by immunohistochemical methods. Moreover we evaluated the hyperproliferation of the epithelial cells by Ki-67, a monoclonal antibody directed against the Ki-67 nuclear antigen associated with cell proliferation.
RESULTS:alfa6 and beta4 are distributed on the basal surface of the basal layer; alfa2, alfa3, and beta1 appeared stained on the lateral surface of the basal and suprabasal layers of the epithelium; av subunit showed a normal distribution on the lateral surface of the basal layer. The evaluation of the proliferative cells was obtained counting the percentage of the positive cells, that were 29.5±6.2, suggesting an hyperproliferation of the epithelial cells that may explain the acanthosis phenomena.
CONCLUSIONS: the hyperproliferation of the epithelial cells and the rearrangement of the extracellular matrix proteins do not induce an altered expression of integrins, and this is probably due to the absence of inflammatory infiltrates or to defects of the keratinocytes maturation.